



## The TexCom Application

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Based on the portion of the discussions I listened to during the contested case hearing (CCH) in Conroe, I presume that the reported completion interval for the WDW-315 well has been the subject of much discussion among the members of the TCEQ UIC team as well. I would appreciate any comments you may offer which may assist us in determining the accuracy of the reported completion interval for this well. This information is critical to the technical evaluation since a permeability value (80.9 md) for the Cockfield formation was derived following a fall-off test in this perforated interval.

It was stated on page VII-5 of TexCom's application that a permeability of 500 md was used in the modeling work for the Cockfield formation since, according to this application document, the permeability indicated by the fall-off test is an "anomaly" (page VI-17 of the package's write up). On the other hand, the application's Section 4 ("Well Test Records") provides great detail on the results of the analyses on the core that was recovered from the 6070' - 6084.4' interval in the Cockfield. The permeability and porosity data provided for five depth readings on page 30 of this Section, under "Summary of Routine Core Analyses Results", appear to come from core plugs analyses, based on the tabulation's format. However, in analyzing the report's computation of the reported average permeability value of 417 md, it appears that each individual core permeability measurement may have been assigned to reservoir segments of equal thickness for the purpose of computing this weighted average permeability value. This "Section 4" of the application document also provides a correlation between porosity and permeability (crossplot) developed using the results of the core analysis. This crossplot is included in the attached file **AttNo04.jpg**.

Segments of the well log that you provided for the WDW-315 well can be seen in the attached files **AttNo5.jpg**, **AttNo06.jpg**, and **AttNo07.jpg**. Porosity readings at one foot intervals from these log segments appear posted in the Table found in the attached file **AttNo08.xls**. The cored interval and the reported completion interval have been labeled in this Table. Also posted in this Table are values of permeability corresponding to the listed density porosity log readings, which were estimated using the correlation in attached file **AttNo04.jpg**.

The permeability values estimated for the cored interval indicate permeabilities in the range of 500 md at a few spots, as shown in the core analysis report. However, the weighted average permeability value across this whole interval is in the range of 160 md. The permeable zones that are most likely to be a part of the reported completion interval appear highlighted in yellow in this Table (**AttNo08.xls**). These 97' of net reservoir exclude any perforations that may have been placed across a shale. The weighted average permeability for this portion of the completion interval is about 60 md, which compares favorably to the 80.9 md indicated by the fall-off test. The use of crossplotted porosities (neutron and density) may have produced a closer agreement with the fall-off test derived average permeability.

The file in attachment **AttNo09.jpg** illustrates a well log segment for a better developed, 102' thick sand body in the Cockfield. Porosity readings from this log segment and their corresponding permeabilities (also estimated as previously described) are posted in the attached file **AttNo10.xls**. The weighted average permeability for the portions of this sand body most likely to be perforated is about 182 md, which compares favorably with that of the much thinner cored interval